# Enterprise Risk

Autumn 2021 / www.enterpriseriskmag.com

The official magazine of the Institute of Risk Management

**Listening and learning:** Stephen Sidebottom, IRM's first independent non-executive chair, on opportunities and threats created by the pandemic

**The net-zero carbon transition:** climate change from COP26 and beyond / **The never-ending staircase:** a roadmap for operational risk / **Risk and urbanisation:** resilience planning moves centre-stage for cities

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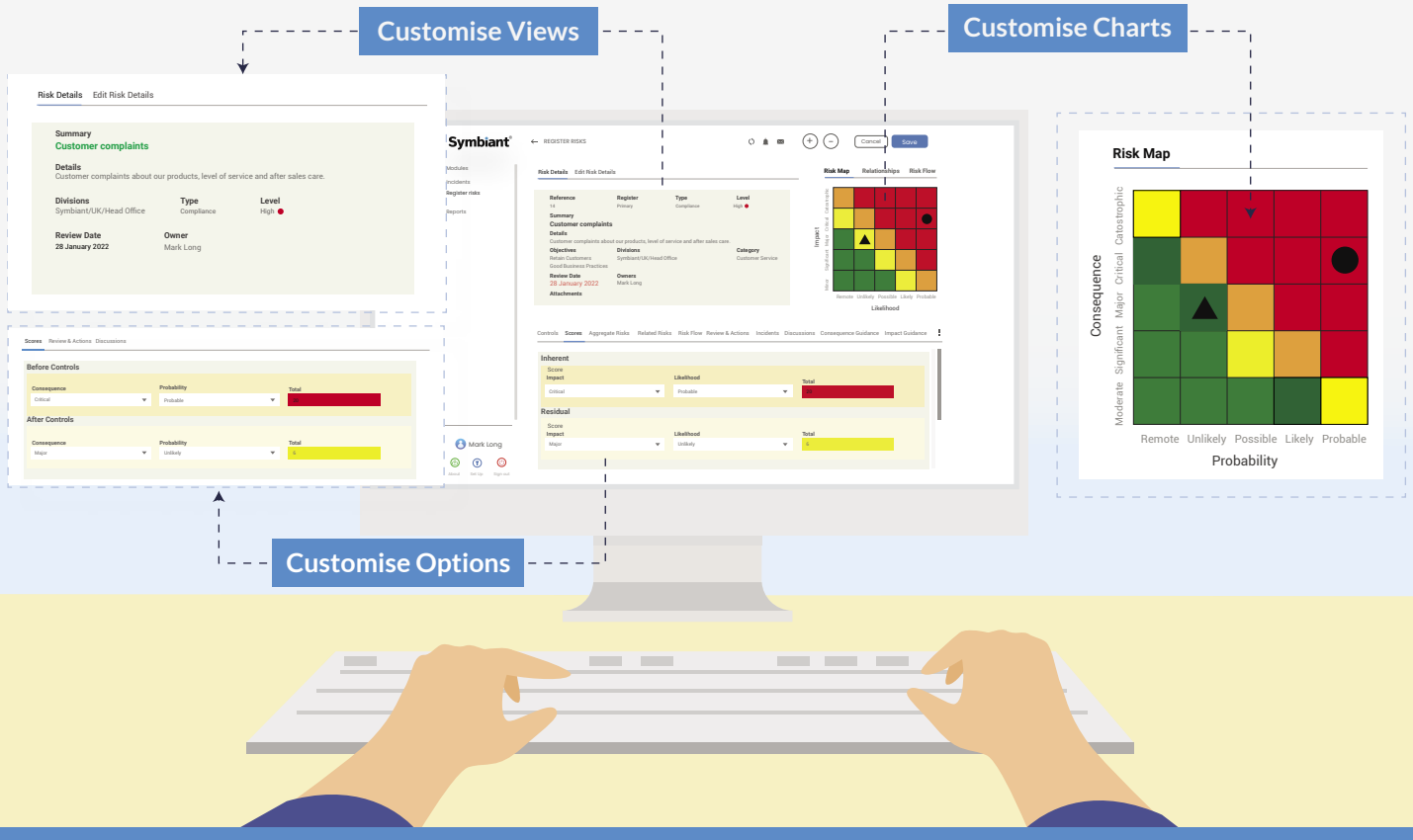


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Enterprise Risk

*Autumn 2021*

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Enterprise Risk is the official publication of the Institute of Risk Management (IRM).

**ISSN 2397-8848**

**About the IRM**
The IRM is the leading professional body for Enterprise Risk Management (ERM). We drive excellence in managing risk to ensure organisations are ready for the opportunities and threats of the future. We do this by providing internationally recognised qualifications and training, publishing research and guidance, and setting professional standards.

For over 30 years our qualifications have been the global choice of qualification for risk professionals and their employers. We are a not-for-profit body, with members working in all industries, in all risk disciplines and in all sectors around the world.

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# Editorial

## Coping with global risks

When people think of environmental change, they tend to focus on extreme weather events – fires, floods and rapid coastal erosion. That's not surprising, given recent media images of countries that seem to be either on fire or under water.

But it is becoming increasingly clear that cities are going to be hard hit by climate change. As we go to press on this issue, New York has been washed out by the tail end of Storm Ida. Last month, 500 passengers on Zhengzhou's Metro Line 5 in China were trapped by a flash flood.

As Gareth Byatt points out in this issue of *Enterprise risk*, almost seven out of ten people will live in urban centres by 2050 (see *Risk in the metropolitan age*, pp. 30-35).

> **Almost seven out of ten people will live in urban centres by 2050**

He argues that risk managers will need to think differently to create urban environments that are resilient. COVID-19 and climate change have both shown that approaches to risk management that do not truly connect to threats from outside the business fail. Being part of complex risk systems means thinking about the extended enterprise in a much deeper way.

But COVID-19 has also shown how important it is to put people at the centre. "Inside your own organisation and with your partners, are you also working with your people and human resources teams to support people with personal resilience and well-being skills?" he writes. "On a broader basis, is there anything you can do to help the communities you serve and also the natural environment?"

This theme is picked up in my interview with Stephen Sidebottom, IRM's recently appointed independent non-executive director (*Listening and learning*, pp. 8-13). He says that organisations will need to reimagine their workspaces and the skills that their people will need to survive in our intensely interconnected world.

Those who learn to view the office as a place of learning, culture building and creating trust are more likely to succeed. In contrast, organisations that stick to pre-pandemic ways of thinking about work and places could end up with a higher cost base and with workers choosing to spend their careers in more progressive businesses.

While these trends may seem a long way off, the pandemic has shown that accelerated change can suddenly arrive. And as the old adage goes, "a stitch in time saves nine." Time to get weaving.

**Arthur Piper**
Editor

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## What our students say

Santander

**Justine Keys**
**HR Risk Manager, Risk & Regulation – Human Resources at Santander UK**
"The IOR CORM has given me a comprehensive view of the fundamentals of operational risk management. This has enabled me to better understand how we manage risk within my own organisation and add value in my role as a Line 1 operational risk manager in the HR function."

nab

**Ellis Williams**
**Consultant – Financial Crime at National Australia Bank Limited**
"CORM has added real value to my self-development and potentially career opportunities by providing me with a working knowledge of a subject that I had limited prior exposure to. The course content was complemented by real-life examples to illustrate operational risk concepts providing for a much better appreciation of the subject and its implications."

Find out more at:

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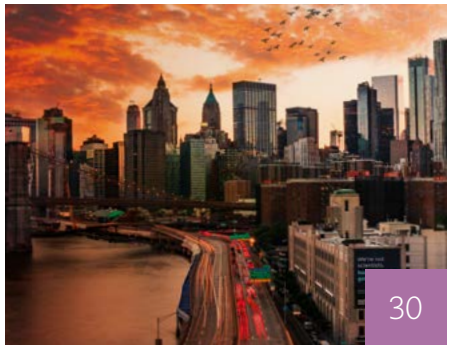
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# Trending

DATA

The latest stories and news affecting the wider business environment as interpreted by our infographics team

## Risk managers focus on cyber and operational risks in pandemic's wake

**62%**

**Assess the effectiveness of Cybersecurity Risk management**

**46%**

**Evaluate the strength of Operational Resilience program and framework**

**40%**

**Assess the effectiveness of Data Privacy Risk management**

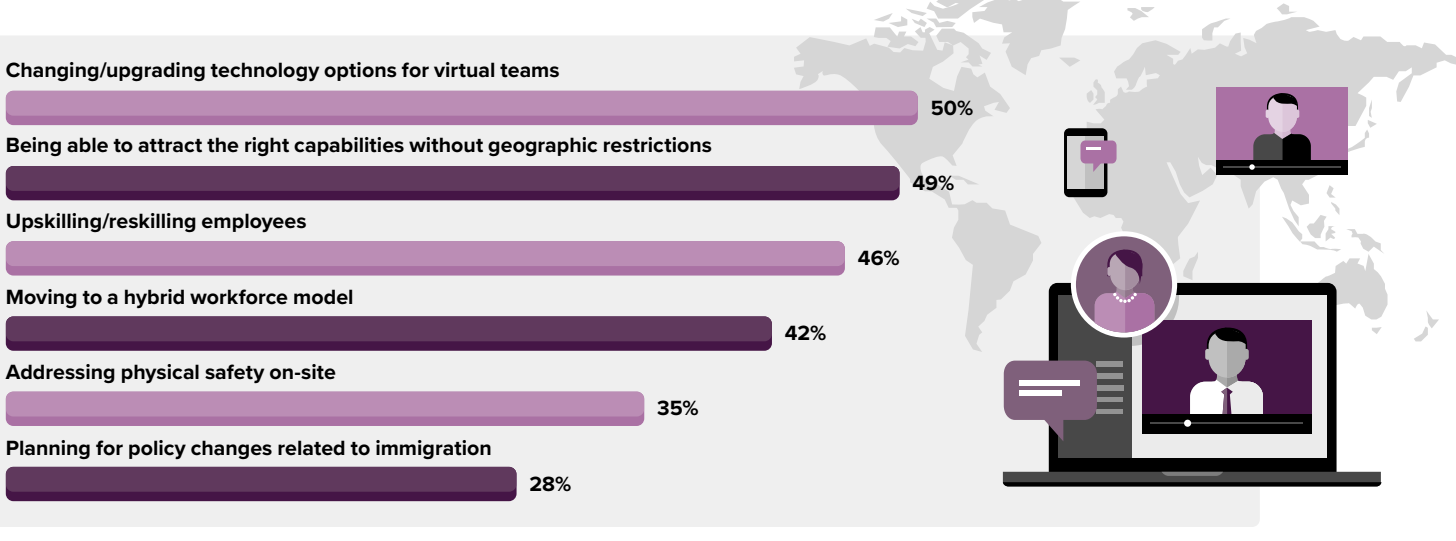
**39%**

**Adopt an integrated Risk Management approach comprising of Policy, Audit, Compliance, Cyber and Third-Party**

Source: *Metricstream: The state of risk management survey report 2021*

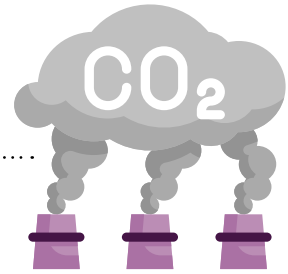
## Risk leaders see opportunities in shifting working patterns

Opportunity knocks as technology opens the door



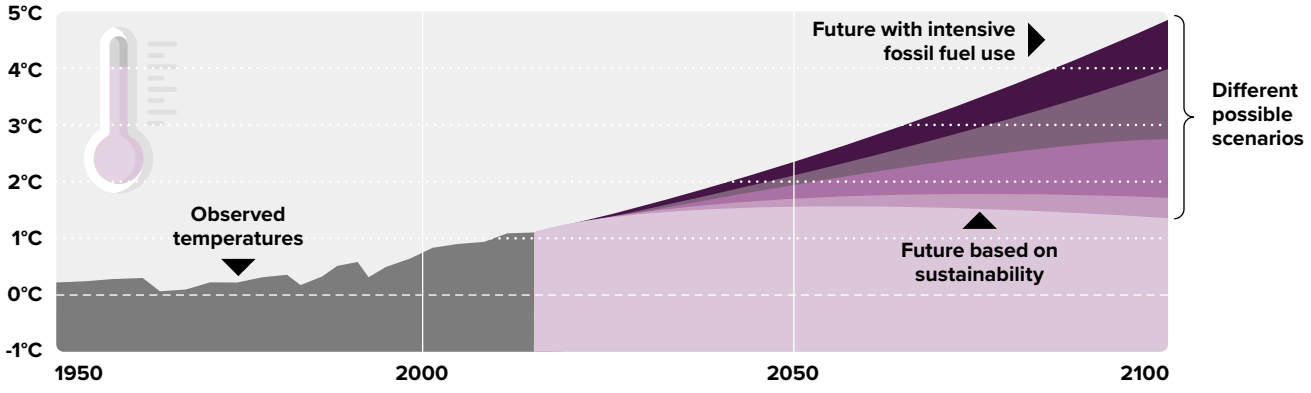

Source: *PwC US Pulse Survey, August 19, 2021: CRO base of 92*

# IPCC predicts risk of high-emissions meltdown

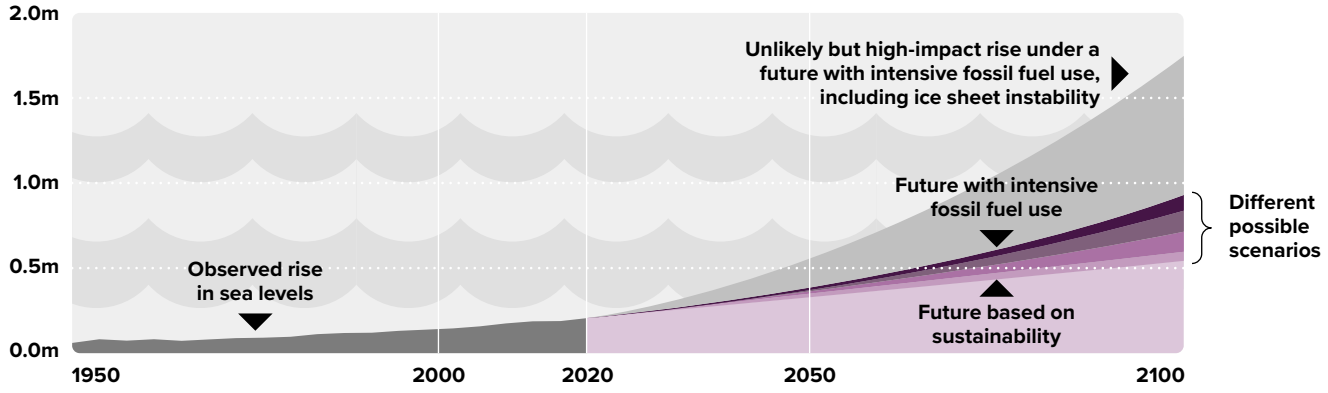



Sustainable energy use could reduce global temperatures

*(Note: Each line shows the average temperature rise for a scenario)*



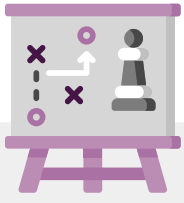

…but sea levels rise in all projections




Sources: *IPCC, 2021: Summary for Policymakers* | BBC

# Board directors want better risk management

Proportion of board directors that:



**84%**

**Do not believe their organisations have a highly effective risk management strategy**

**79%**

**Believe improved risk management will be critical to build and protect value in the next five years**

**59%**

**Say allotting more time for open discussion of emerging trends and potential disruptions would improve risk-management oversight**

Source: *EY Global board risk survey 2021*

**Luck is not the best defence against large-scale complex risk**

# Listening and learning

**BY ARTHUR PIPER**

From how businesses create value to the use of office space, the pandemic has turned traditional thinking on its head. IRM's first independent non-executive chair, Stephen Sidebottom, sees both opportunity and threats for risk professionals and the organisations they serve

Back in 2003, a major new airborne virus going under the name of severe acute respiratory syndrome (SARS) was getting underway. All the signs showed that it could be deadly and spread rapidly. Stephen Sidebottom, IRM's recently appointed independent non executive chair (previous chairs have been IRM volunteers), recalls being involved in pandemic planning in the global bank where he worked as head of human resources. Luckily, that virus petered out – but the experience was salutary.

"The narrative around the pandemic is that no one could have predicted it – that it was a black swan event," he says. "The reality is that that is not true."

SARS remained on the bank's risk register, and on the register of many global businesses until COVID-19 broke out and made a pandemic a reality. Preparedness levels were low, according to an IRM survey conducted in summer last year, despite the fact that many risk management functions had gone through the motions of assessing the risk. Few had put any meaningful mitigation strategies in place – even fewer had done scenario plans. Luckily, many businesses were able to use, or rapidly put in place, digital infrastructures to keep going, something that would have been impossible in 2003.

## Lessons

Clearly, luck is not the best defence against large-scale complex risk. Sidebottom wants to see organisations go through a period of deep reflection about the nature of systemic risks and to understand what

> **In future, business could better understand the office as a place of learning, culture building and creating trust**

has gone well and what has not over the past 18 months.

"Organisations should be less focused on the specifics of a risk type, or a specific risk event, and more concerned with just how you deal with uncertainty by imagining what *could* happen," he says. The skills to respond to unpredictability by rapidly inventing practical solutions need to be better understood and built on, he believes.

That does not mean that doing detailed planning for emerging events – and practice runs within the business of the risk mitigation strategies – is not important. In fact, Sidebottom highly recommends it: "I have done that many times in my career. What that has meant is that when things have gone wrong, I have known what to do – there has been some muscle memory of the structure and nature of the organisation's response."

The pandemic has shown that such an approach is no longer enough on its own. That is because in a globally connected world, risks are essentially too complex and interlinked to be transparent and knowable in the way it was once believed they were. He points to just-in-time supply chains as a case in point, many of which failed in the early months of the pandemic.

"Such supply chains are difficult to manage because they often lack transparency at the second, third and fourth levels," he says (see ***Chain reactions***, from Enterprise risk, Summer 2021). "Fixing those issues may be uncomfortable because it argues against the managerial efficiency-driven business agenda – not that you don't want to be efficient, but if you have taken out any capacity to deal with uncertainty in your system, you are going to get caught out when something goes wrong that you haven't predicted." Moving to a systems-based view of risk means being better prepared to accept and therefore plan for complexity and uncertainty.

> **Moving to a systems-based view of risk means being better prepared to accept and therefore plan for complexity and uncertainty**

## Shifting values

He also says executives need to get a firmer understanding about post-pandemic value creation. Many companies have lost some of their distinctiveness to customers as they have switched to new operating conditions, but others will have gained new value. Since the changes that have come about because of COVID-19 are unlikely to be fixed, organisations would benefit from more flexible and agile strategies to cope better in future.

Choices are unlikely to be black and white. For instance, Sidebottom asks, what does the office mean to businesses going forward? He is sceptical about the need for white-collar workers to rush back to a central building to carry out basic transactional work – the pandemic has proven that such tasks can be done effectively offsite. "In my career, I have spent most of my time working from anywhere in the sense that while I was going into an office, I was often dealing with executive issues that were nothing to do with that specific office as a place," he says.

In future, business could better understand the office as a place of learning, culture building and creating trust, rather than as a physical shell in which people spend a set number of hours a week. He also believes that those organisations that stick to pre-pandemic ways of thinking about work and places could end up with a higher cost base and with workers choosing to spend their careers in more progressive businesses.

## Trust in place

The trust agenda is particularly important to Sidebottom. He points to the mistaken belief that businesses cannot do creative work online. But creative work does need high levels of intimacy and trust among staff, and that is much harder to create and promote using online platforms. He says, "That is why global organisations that are working virtually do things to bring people together regularly – sharing experiences, getting to know each other – and that will need to happen much more if teams are to operate successfully online in future."

On the other hand, he is also sceptical about the death of the office building. Places are often essential training grounds for new people to pick up the culture of organisations by being present with longer-serving team members. Apprentices in particular need to see people in action, he says. When co-workers mess up, think out loud, vent and get confused, they create learning opportunities that are harder to replicate in online environments. While many issues can be dealt with by smart use of technology, the non-transactional parts of the business where people pick up cultural norms are much more difficult to learn about without in-person experience.

Places also describe organisations and their culture through atmosphere and semiotics. For instance, smart city buildings can equal power and security. "Maybe you do want your bankers and auditors to have big fancy offices where you turn up every now and again, especially if they are going to guide you on some massive acquisition opportunity – and do it well," he says. "If you are being introduced to 20 people on laptops sitting in their bedrooms, you may not be as easily convinced that they have the status and prestige to deliver."

## Strategic on talent

While Sidebottom believes that people will leave businesses that get the above issues about talent management wrong, there are more fundamental, strategic issues at play.

"The really significant long-term strategic issues are around how businesses are thinking about re-skilling, continuity and experience in key executive roles, and the interface between automation and people," he says. Career models have been disrupted by technology for a few decades now, but the pace of change is accelerating – not least because of the pandemic. Digital automation both eradicates transactional jobs and puts skills and processes into black-boxed

artificial intelligence programs. "If key processes are no longer transparent, where are people going to learn the underlying fundamental principles that inform some of the more high-level stuff businesses do?" he asks.

The pandemic has also helped disintermediate middle management and has closed the gap between senior executives and those managers on the front line. In a crisis situation, leaders need to be much closer to the action and in many cases have devolved decision-making power and created agile customer-facing working teams. While Sidebottom sees the pendulum swinging back to some extent, the question about who should make decisions in the organisation given the data systems now available is an issue that will remain a challenge and an opportunity.

He is also less than convinced that all businesses have properly understood the push for diversity and the business case for encouraging and welcoming more difference within an organisation.

"The value of difference is that you have competing and alternative perspectives on the world," he says. "This is the only way you can address issues of bias – and we are all hard-wired to have prefigured views on a whole load of things."

Creating a diverse and inclusive environment is one of the best ways to mitigate many people risks. For a corporation operating in an unpredictable environment, it can make the difference between success and failure. If you have a diverse and representative workforce, for instance, you are more likely to understand and connect to your customers – not just in the UK but globally. And being open to genuine challenge from within the business can feed into the resilience and innovation agenda by making the organisation more open to change.

## Adapting to uncertainty

Having worked in many regulated businesses, Sidebottom appreciates the value that risk managers can add to organisations in the current fluid situation. He has witnessed a gradual shift for risk professionals to become less tactical and more strategic in their support of boards.

"This question of understanding and adapting to complexity and unpredictability is a real opportunity for risk managers to move further into the strategic space," he says. One way of doing so is to understand the big external forces at play in the world and bring meaningful ways of responding to those trends to the business. He says that the ESG agenda represents one way of articulating those issues because it provides an opportunity for the risk function to spend more time looking outside the business to the wider risk landscape.

"Risk managers need to look further to the horizon at emerging issues at the same time as changing their usual two to three-year planning horizon," he says. For instance, achieving net zero carbon goals means understanding what needs to be true for the business 20 years from now and acting on it today. That may be common practice in sectors such as construction – where infrastructure projects have decades-long time spans – but few other businesses typically operate beyond a three-year cycle.

## Upskilling

Not all risk functions have reached the level of maturity to achieve those aims. Where the risk function is unclear about its place in the business – especially in relation to the three lines of defence model – it needs to seek clarity and make sure it has a collaborative relationship with the other risk and management functions, he believes. Risk management needs to be embedded at every level in management decision-making. It's also crucial to get a firm handle on the skills the team has and needs.

"Businesses need to square that circle between deep specialisation and a much wider conceptual framework for thinking about systemic risks," he says. IRM qualifications are a major part of the professionalisation of the team – and so is upskilling the risk controllers who are not formally risk managers but manage risks through operational processes.

He is also adamant that communication and influencing skills should not be left to chance or downgraded in comparison to technical know-how.

"I would describe those as performance skills, never soft skills, because they are as hard as any other skill –using them is how you get things done," he says. Influencing people, creating a compelling narrative to guide the board and management and framing purpose and meaning in the activities that people do are all critical skills, he believes: "They are fundamental drivers of performance. That is a tool that is needed for risk managers as they engage with this wider conversation."

> **"The really significant long-term strategic issues are around how businesses are thinking about re-skilling, continuity and experience in key executive roles, and the interface between automation and people**

> **Risk managers need to look further to the horizon at emerging issues at the same time as changing their usual two to three-year planning horizon**

## Work to do

Sidebottom is bringing with him not just decades of experience as a human resources director in international banking and finance firms (much of this time spent overseas) but also considerable experience in chairing the board of the human resources body for the financial industry – City HR. He is also chair of a credit union and a court member of the HR Guild.

His role is to chair IRM's board and act as both a guide and critical friend. He is in "listening and learning" mode at present, having taken up the role a couple of months ago, but has already identified some areas where he feels IRM can make more of a difference.

He wants to make sure, for example, that the Institute is providing the best experience for its members when it comes to qualifications and training. That will entail both learning from the experiences of the past year and a half, and developing new products and services in a more agile and innovative way.

He also wants to see IRM double down on the progress it has made on the international scene over the past five years or so. "We want to expand our reach and really push the value for businesses of developing a comprehensive set of risk management skills – and for our members to be able to evidence that through professional status and ongoing CPD," he says. ER

# The net-zero carbon transition

BY MARTIN SIEGERT

Ahead of COP26 in Glasgow, the world is getting ready for firm, irreversible and immediate action to tackle climate change

On November 1, political leaders from across the world will come together in Glasgow at the so-called COP26 meeting, to discuss and agree the urgent measures necessary to avoid severely damaging global warming. Obviously, significant and immediate reductions to greenhouse gas emissions will be highest on the agenda. Two specific targets are apparent: (1) to reduce emissions by 50 per cent of their 1990 value by 2030; and (2) to reduce them further to net-zero by mid-century.

Here, I look at the challenges they will face, the risks of failure and the opportunities presented by the transition to a sustainable future.

## Why are carbon dioxide emissions damaging to our climate?

Humans have been emitting greenhouse gases, and in particular carbon dioxide ($CO_2$), at an industrial scale and at increasing rates since the Industrial Revolution in the mid 19th century. Atmospheric $CO_2$ is particularly troubling, not because it is the most potent greenhouse gas but because it can remain in high concentrations for long periods (in the order of centuries).

So, as we incrementally add more $CO_2$ into the atmosphere, its gross value increases gradually and inevitably. Its atmospheric concentration today is around 415 parts per million (ppm). That might not sound like a lot, but it was only about 280 ppm in 1950, and since the 1960s we have added 100 ppm worth of $CO_2$. As a consequence, the world has warmed by over 1C since 1850. The last time the world experienced over 400 ppm of $CO_2$ was more than 3.5 million years ago, when the climate was far warmer than now.

**What ancient climates tell us about high carbon dioxide**
*https://bit.ly/3grFKWi*

While knowledge of the past tells us to be concerned about our predicament, projections of future emissions force us to acknowledge that climate warming could reach levels that lead to existential threats within this century. Left unabated, and under a worst-case scenario of inaction, $CO_2$ levels could reach 1,000 ppm by 2100, and the world may warm by a further 4C, and much more thereafter. Such an outcome would be a catastrophe for our ability to inhabit the planet. This is why many say avoiding dangerous climate change is our greatest challenge.

We are locked into further warming because of the emissions already made. Scientists calculate that a further 0.5C is unavoidable, bringing the warming to at least 1.5C above 1850 values. They also believe that it is possible to halt the warming at this level, provided strong action to curtail emissions is made.

**Global Warming of 1.5 ºC**
*https://bit.ly/3jbOzoC*

## International consensus and failure

To build a common understanding of the problem and its solutions, organisations such as the Intergovernmental Panel on Climate Change (IPCC) (focused on the science), and the UN Framework Convention on Climate Change (UNFCCC) (forming political agreement), have been in operation since the 1990s. In successive assessment reports, the IPCC has laid out the scientific case for anthropogenic global warming to an extent that it is irrefutable.

> **Climate warming could reach levels that lead to existential threats within this century**

However, the UNFCCC and its supreme decision-making body, the Conference of the Parties (COP), had continuously failed to find any notable political solutions until its 21st gathering in Paris in 2015. COP21 saw the first meaningful international agreement on $CO_2$ reductions, formed by gathering emissions targets from all nations: their so-called "intended nationally determined contributions" (INDCs). If implemented in full, these INDCs would lead to over 3C warming by 2100, however.

**World on course for more than 3 degree spike, even if climate commitments are met**
*https://bit.ly/3gvinuL*

So, while the Paris Climate Agreement was hailed as a success, it alone is insufficient to solve the climate problem.

## Carbon economics

It is easy to point the finger at our politicians about this failure, but those of us in countries with developed economies are all responsible. Indeed, it may be unfair to expect politicians to have the answers to this problem, even though many claim to. One obvious issue is that there is no upfront economic value for carbon dioxide emissions. It costs us nothing to spew greenhouse gases into the atmosphere, yet there is a price – and that will be in the damage done by unchecked warming to planet and the livelihoods of our children and those who come afterwards.

Realising that the cost of emissions should be paid for now rather than by future generations seems so obviously fair and reasonable, but it is remarkable that we apparently care so little about the damage we are causing to them that we collectively carry on regardless. Yes, there have been attempts at costing in the price of $CO_2$ emissions such as in direct carbon taxes, cap and trade schemes and carbon offsets, but none of them have successfully shifted the dial enough to make a visible difference to emissions.

If we can find agreements, at national or international levels, that place an appropriate price on carbon, and we factor this price into what we charge emitters (and therefore customers), we will find that business will start to compete on emissions, forcing the reduction of greenhouse gas emissions. It would also support the supply of low/zero-carbon electricity versus that produced from fossil fuels. Hence, for many, an appropriately set carbon price is essential to

> **While the Paris Climate Agreement was hailed as a success, it alone is insufficient to solve the climate problem**

**The World Bank – Pricing Carbon**
*https://bit.ly/3zd0eJB*

**Image:** The Ahr river flows past houses destroyed by floods in Insul, Germany.

Image credit: Nick_ Raille_07 / Shutterstock.com

solving the climate problem.

Governments can also help in setting the rules under which we trade to support low-emissions goods and services. For example, the UK government procures nearly £300 billion in goods and services from suppliers, about a third of all public expenditure. While there are many rules and regulations set up to ensure fairness and value for money in the procurement process, assessment of $CO_2$ emissions is not one of them. Hence, it is possible that high-emissions products are procured over low-emissions equivalents. It would seem quite easy to make this change, and doing so would force suppliers to compete on emissions.

## What can we achieve?

Scientists advise that the 1.5C target is achievable, but it requires two broad ambitions. The first is to reduce emissions from 1990 levels (or thereabouts) by 50 per cent in 2030 (that is less than nine years away) (www.50x30.net). The second is to continue and accelerate progress to 2050 when we hit net zero; that is any emissions made are balanced by the capture and storage of $CO_2$, be it mechanically or naturally.

While the natural world absorbs a great deal of our emissions, we can't rely on the oceans, forests and wetlands to draw down the full equivalent of our emissions. Hence, we are likely to require machines to capture $CO_2$ from the exhaust material of powerplants, steelworks and concrete plants (among others), and also directly from the air itself. While the technology exists to do this now, albeit some refinement is required before it can be scaled, the lack of a carbon price prevents adoption to any meaningful level.

Ahead of the 2015 Paris COP21 meeting, the UK government commissioned a study to investigate what a +2C world would look like, as well as what dangerous climate change would be avoided, and how much investment and which technologies would be needed to achieve this. The study, a collaboration between the UK Met Office, Imperial College London's Grantham Institute and the University of Reading, among others, (the AVOID 2 programme) led to several important assessments on the challenges to delivering a 2C target.

Emission reductions require investment, estimated at

**There aren't enough trees in the world to offset society's carbon emissions**

*https://bit.ly/386tqWG*

**Addressing the climate change challenge with sustainable procurement**

*https://bit.ly/3B7ah3j*

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## What our students say

**Audrey Onsomu IRMCert, Audit and Assurance Supervisor, PwC**
"My IRM qualification is a treasure. I would encourage anyone already pursuing a risk management career or looking to move into risk management to do the certificate. The qualification and study are well set up to ensure you obtain the knowledge that you will need to succeed. My qualification has helped firm up the experience I have had over the last 6 years."

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Developing risk professionals

**Image:** Kaumov Ka-32 fire-fighting helicopter dumping water in a cloud of smoke rising from forest fires in Marmaris, a resort town in Turkey.

Image credit: Alizada Studios / Shutterstock.com

> **While governments can set the environment for clean growth, it is non-state actors like cities, states and businesses, as well as the general population, that must take up the challenge and deliver the change**

around 1.7 per cent of global gross domestic product (GDP) if we implement the changes from today. The annual rate of decarbonisation would then be around 4 per cent, similar to the rate at which Sweden decarbonised in the 1970s. So, acting now is well within the realm of known possibility. However, if we left taking action until ten years' time (ie 2030), a 2C target would require 2.2 per cent of GDP and a rate of 9 per cent (ie 30 per cent more expensive at outside the level at which we have decarbonised previously). Further, delivering a 2C target from 2030 would need us to scale zero-carbon electricity at rates far in excess of the rate at which coal-fired power stations were deployed in the 20th century. In other words, leaving action until later is both costly and less feasible.

While challenges ahead look daunting, there are reasons to be hopeful that the changes necessary are potentially within our grasp. The first is to say that a lot of progress has been made to date. While it hasn't (yet) led to reductions in global emissions, the first steps in the right direction should be noted. The Paris Climate Agreement is a good example – on its own it doesn't deliver the changes needed, but as a step toward appropriate international action it is a milestone.

Second, a great deal has moved on in the last ten years. The voice of climate denial is largely irrelevant to serious debate on the subject. The cost of solar photo-voltaic technology and wind power has reduced far greater and more quickly than anyone predicted. And no one suspected that Elon Musk, a US tech entrepreneur, would disrupt the car industry to the level seen today. These advances reduce energy costs, clean our air and, importantly, allow investments in the businesses of tomorrow instead of those built in the past.

**The Disruptive Power of Low-carbon Technology**
*https://bit.ly/3gv7YPU*

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## What our students say

**Charlotte Candy CMIRM, Associate, Risk Management Buildings and Places, AECOM**

"The IRM Diploma in Enterprise Risk Management has given me invaluable tools and techniques to tackle difficult and sometimes previously unheard of scenarios. IRM qualifications not only provide confidence for employers and clients that you take best practice seriously, but it also gives you access to a huge range of resources and publications."examination and high standard of pass marks."

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**Resilience, risk and recovery**

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Developing risk professionals

Climate finance is a significant enabler if we get the conditions to support it right. We must halt fossil fuel investments, stop financing the search for more oil and gas, and incentivise investments in clean businesses. There is enough money to make this work – within pension schemes and sovereign wealth funds – but it needs to be mobilised in a way that both supports emissions reductions and allows economic development. While governments can set the environment for clean growth, it is non-state actors like cities, states and businesses, as well as the general population, that must take up the challenge and deliver the change.

## Looking ahead to solutions

On April 22, 2021, Earth Day, President Biden hosted a summit where countries around the world pledged to improve their Paris INDCs. The fact that the US has a president committed to climate action is highly significant, of course, and the resulting and numerous raised ambitions to hit both the 2030 50 per cent and 2050 net-zero targets were pleasing to see. While unlikely to be compliant with a 1.5C outcome, they are likely to collectively lead to something short of 2C, if implemented in full.

That is a big if, however. Targets are necessary, but obviously easier to say than achieve. COP26 offers world leaders the chance to explain the actions they will take in the coming decades. Decarbonising within the next 30 years will change the way we live on our planet. The careers of those at university today will be shaped by this change. It is to them we must look to, to continually accelerate the action. We might ask whether we are equipping these students with the skills they need, and we might ask why so few business schools have dedicated climate programmes, but, in my experience, we should not underestimate the awareness of younger people of this problem, or their determination to engage with the challenges.

> **“ Is the climate problem relevant to risk managers? The answer is obviously and most certainly yes**

Is the climate problem relevant to risk managers? The answer is obviously and most certainly yes, and in three distinct ways. First, *physical risks* are associated with environmental change relating to the effects of, for example, increasing temperatures and heatwaves, enhanced rainfall and flooding, soil erosion and food production, aquifer depletion and freshwater availability, and the ice sheet melting and sea-level rise. We have seen negative consequences in each of these areas, and further problems are already locked in. Second, *transition risks* are linked to the policies and decisions that are needed and necessary to deliver a net-zero global economy by mid-century. In some areas, the transition will see huge growth opportunity, and in others contraction is highly likely. Third, *liability risks* relate to the future litigation of organisations that knowingly do not comply with the transition and willingly introduce environmental damage as a consequence. Legal cases in this area are increasing, as recorded by the Grantham Research Institute at LSE.

The net-zero transition will change the way we inhabit our planet. Consumption must reduce and energy efficiency must increase, and this must be the case in all sectors. Emissions must be costed and paid for properly and upfront. We know how to do it, we know we have to do it and we have the money to achieve it. We simply need the collective guts to get on with it.

COVID-19 will define the early 2020s. There are strong parallels with climate change to make note of. First, although a global pandemic was predicted by science, the world was not ready for it. Second, a combination of technology (in this case in the pharmaceutical sector) and behaviour provides the only route out. Third, governments need to be informed by science and work together to reduce transmissions and deploy vaccinations. And fourth, financing has been made available at scales not seen outside of wartime. We need similar global determination to decarbonise. While COVID-19 is horrid and unwanted, it illustrates that the world can work together when it is necessary.

**LSE Climate Change Laws of the World – Litigation Cases**
*https://bit.ly/3sJRI24*

**Martin Siegert is the co-director of the Grantham Institute and professor of geosciences at Imperial College London. He is a climate scientist and glaciologist who specialises in using geophysical measurements to understand how the world's polar ice sheets change under global warming. The Grantham Institute (www.imperial.ac.uk/grantham) is Imperial's multidisciplinary hub for action on climate change. Learn more about IRM's Risk Management Training Course run in conjunction with Imperial College London and the Grantham Institute here: https://bit.ly/2X0hiV6.**

# The never-ending staircase

**BY JIMI HINCHLIFFE, DAVID GOODYEAR AND ANDREW SHEEN**

The UK regulators have provided a roadmap for operational resilience that all businesses can benefit from. It is time to take the first steps

Operational resilience is the hottest topic in risk management. Even before the UK regulatory authorities (the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA)) published their joint discussion paper in 2018 (their most downloaded discussion document), they were working with the larger UK firms on operational resilience.

Consultation papers followed in December 2019, followed by the Basel Committee on Banking Supervision (BCBS) Principles for Operational Resilience. The much-anticipated final UK regulatory policies were published in March 2021 (along with the final version of the BCBS Principles). It is a shame the high-level BCBS Principles did not come first because the more detailed and practical UK policy documents address not only the "what" (which is broadly consistent with the BCBS) but also the "how". Many firms who are not even in scope of the UK regulations, in the UK and overseas, are utilising the UK policy as a practical good-practice guide for how to deliver operational resilience outcomes.

The regulations are demanding, and organisations are caught between a challenging present and a highly uncertain future post-COVID-19. This article aims to help risk managers navigate the challenges of getting operational resilience right. Like every journey, the path to operational resilience requires a number of steps: know where you are, know where you want to get to, plan your journey and travel to your destination.

**"The regulations are demanding, and organisations are caught between a challenging present and a highly uncertain future post-COVID-19**

### Know where you are

You may well be in a better position than you think, as you will already have many of the important building blocks needed to build operational resilience. As we have already explained, operational resilience is the outcome of effective operational risk management (ORM), so you will already have many of the required elements through your ORM. Examples of these are business continuity management, crisis management, cyber security, IT resilience, third-party risk management and the glue that binds it all together: a fit-for-purpose ORM framework.

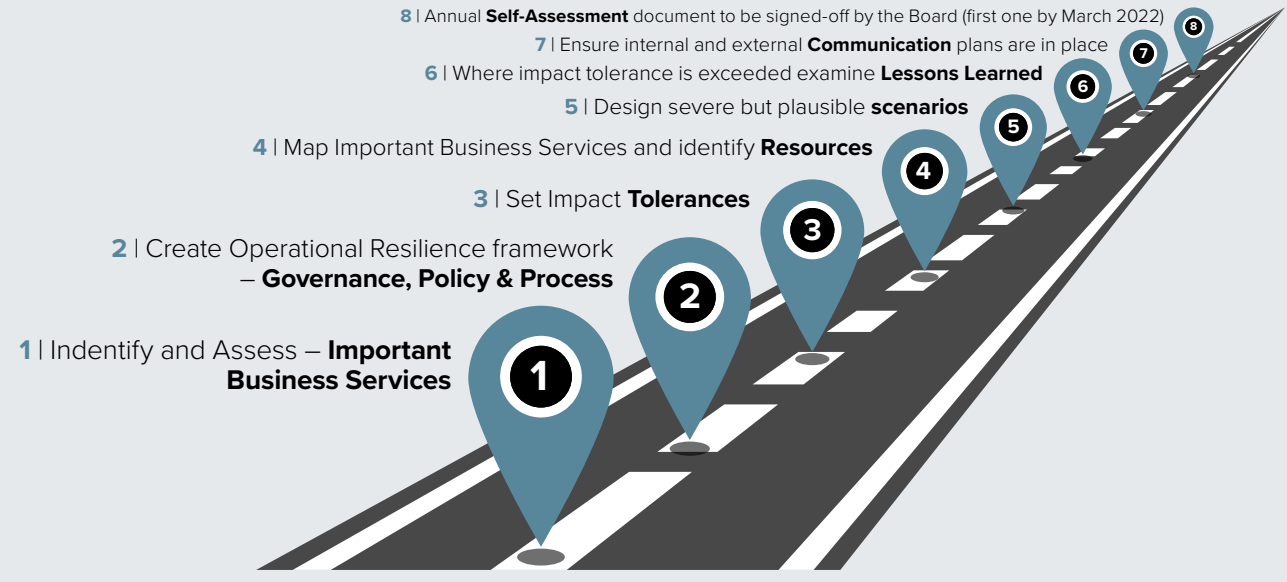
However, the building blocks may currently be operating at varying degrees of maturity, in a siloed approach, for example, or in situations where you may not be fully aware of what you have or how effective they are. To clarify your current position, carry out a health check and maturity assessment on the current state of each block and the ORM framework they exist within. An excellent technique to achieve this is to undertake a five-point maturity assessment. This will also articulate areas for improvement, and the enhancement of the framework will go beyond resilience alone, reinforcing the risk management practice – and compliance – of the whole organisation.

After this gap analysis, you are likely to find established disciplines such as cyber security will score relatively well. On the other hand, areas requiring the identification of important business services that enable end-to-end assessment of a service from the customer perspective (or the governance over it) may not yet exist. Do not panic. You may have some existing information which was produced for another purpose or context that can be used.

## WHAT IS OPERATIONAL RESILIENCE?

Regulators define operational resilience as the "ability of firms and FMIs and the financial sector as a whole to prevent, adapt, respond to, recover and learn from operational disruptions." But isn't this the same as operational risk management or business continuity management? For a long time, there was significant confusion in the industry on this point, until the BCBS and some national regulators clarified that operational resilience is an *outcome of effective operational risk management*.

## THE RESILIENCE JOURNEY


8 | Annual **Self-Assessment** document to be signed-off by the Board (first one by March 2022)
7 | Ensure internal and external **Communication** plans are in place
6 | Where impact tolerance is exceeded examine **Lessons Learned**
5 | Design severe but plausible **scenarios**
4 | Map Important Business Services and identify **Resources**
3 | Set Impact **Tolerances**
2 | Create Operational Resilience framework – **Governance, Policy & Process**
1 | Indentify and Assess – **Important Business Services**

*Source: The JADEtc. Partnership*

> **The purpose of mapping is to identify vulnerabilities and weaknesses in the resources used to deliver important business services**

### Where you want to get to

A realistic objective should take into account regulatory requirements and expectations on operational resilience for a firm of your size, nature and complexity. A proportionate approach is perfectly acceptable. Indeed, it is a core principle of the UK regulator's approach.

Be clear about your desired outcomes, identify key sponsors and stakeholders and embrace operational resilience as an outcome of sound ORM. This has numerous advantages, including, crucially, the potential to use what you already have, thereby avoiding duplication, confusion and the needless costs of running separate frameworks. An integrated approach to operational resilience under ORM may also help break down existing siloes, which can be a significant barrier to effective risk management and can undermine operational resilience.

### Plan your journey

Before setting off, use the results of this health check and gap analysis to create a clear target operating model and a roadmap to achieve it – at least at the high level. Ensure that appropriate governance is in place over the project, including accountability, using the existing change management framework – another example of leveraging what you already have.

Like all journeys, plans will need to change along the way. But if you start off with a clear direction, are well prepared and have an awareness of the challenges and hurdles you will face along the way, you will have a much better chance of arriving at your – and the regulators' – desired outcome.

### Travel to your destination

In the words of Confucius, the longest journey begins with a single step! Step one of your operational resilience journey should be to establish robust governance, including assigning committee governance oversight and accountability.

In terms of committee governance, rather than create new committees, use what is already there. This may mean tweaking the terms of reference and membership of existing committees, but this is often far preferable to creating new committees, which increases complexity and the potential for issues and risks to fall through the gaps. Absence of evidence is evidence of absence, so remember that you will need to evidence the various steps and decisions so that the board can sign off.

Accountability is a central pillar of the UK regulatory approach and a fundamental driver of culture. UK regulators require that where

## WHO IS ACCOUNTABLE FOR OPERATIONAL RESILIENCE?

UK regulators require that where there is an SMF24 chief operations function in place; the SMF24 should be accountable for implementation and reporting on operational resilience. We have seen firms where the first line is leading – usually operations – and where the second line risk function is leading. However, in our opinion a partnership between first and second lines of defence is the best solution.

an SMF24 exists, they should be accountable for implementation and reporting. However, the journey to deliver operational resilience requires more than one driver – in our experience, a partnership between first and second lines of defence is key.

Finally, in the first leg of the journey to resilience, the approach should be documented in policy and procedure, and cross-referenced to other relevant documents, such as the ORM policy.

### Identify and assess important business services

One of the most radical aspects of the UK's approach to operational resilience is the focus on business services. The PRA and FCA aligned their definition of important business service in the final policy statement (see *Important business service definition*).

The critical point is that the service is provided to a client. As such, internal services, such as human resources or finance, are not considered important business services. Disruption to any of these client services would cause intolerable harm to clients or pose a risk to the UK financial system, firm safety and soundness or financial markets. ORM, driven by the original definition of operational risk in Basel 2, has traditionally focused on internal financial impact, so operational resilience requires a shift to a broader and more outward focus on impacts.

That is why, for step two of this journey, a useful starting point for identifying potential important business services is to map your products (easily identified on the company website) to services in a simple grid. Firms can then assess the identified business services against a checklist (UK regulators have provided a range of criteria in their final policy) to identify which business services are important. The criteria should capture the potential for disruption to cause harm to consumers or risk to firm safety and soundness, market and financial system stability. Be sure to consider planned changes to your business. For instance, if a business line is expected to grow significantly, it may make sense to capture it in the initial cut.

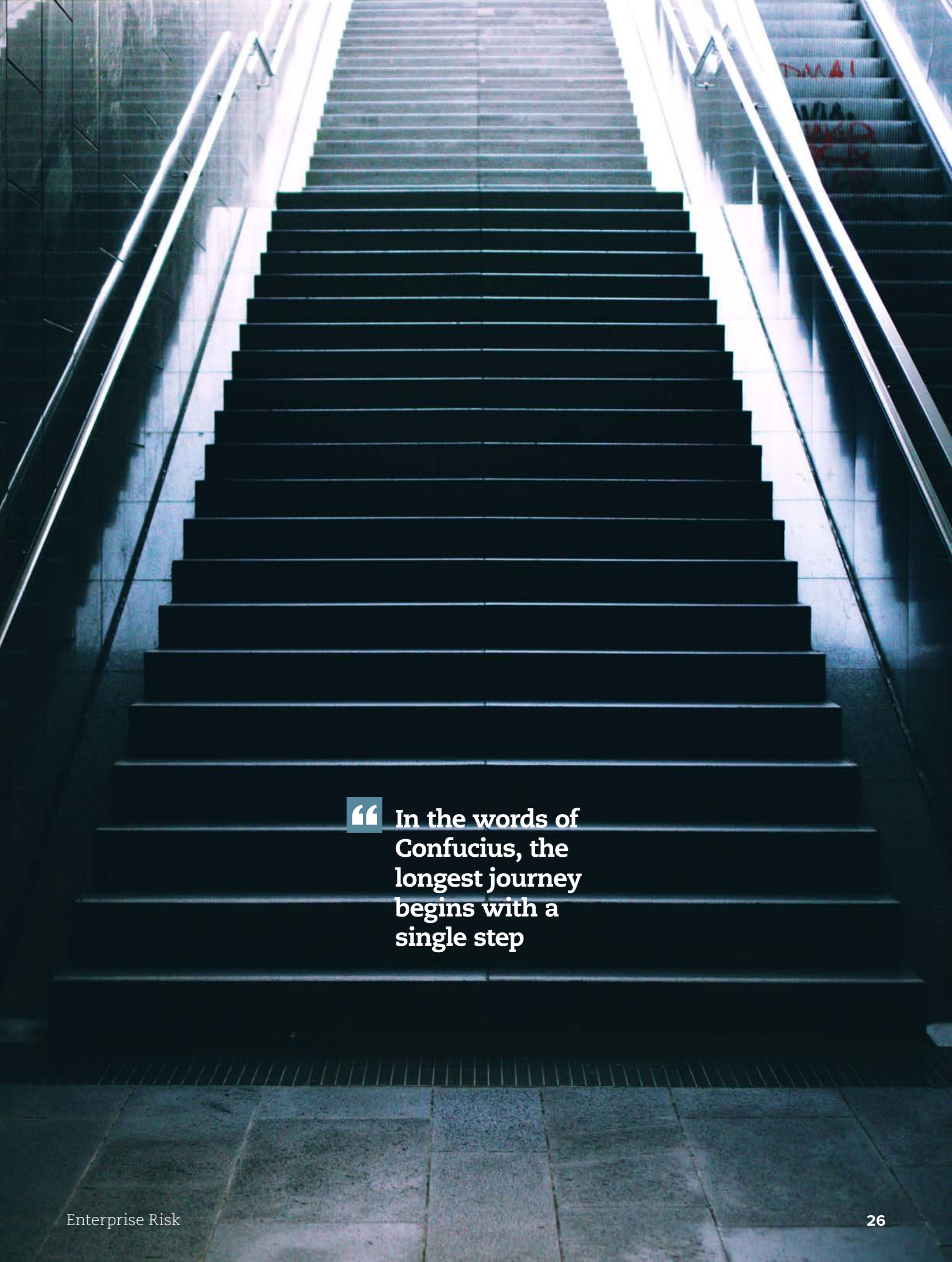
There is no magic number for how many important business services a firm will have other than all firms should have at least one. It depends on a range of factors including the business model, scale and the firm's judgment as to potential harm that disruption to services could cause. The board must approve the list of important business services at least on an annual basis, or where there is a material change to the business or the market in which it operates, and it will be subject to review and challenge by regulators through the self-assessment.

### Set impact tolerances

Step three is perhaps the most challenging aspect of the journey to resilience. It entails establishing impact tolerances (or in BCBS parlance, tolerances for disruption). Impact tolerance is the maximum tolerable level of disruption to an important business service. Impact tolerances are fundamental

## IMPORTANT BUSINESS SERVICE DEFINITION

| TERM | PRA | FCA |
|---|---|---|
| **Important Business Service** | A service provided by a firm, or by another person on behalf of the firm, to another person which, if disrupted, could pose a risk to:<br>1. (where the firm is an O-SII/where the firm is a relevant Solvency II firm) the stability of the UK financial system;<br>2. the firm's safety and soundness; or<br>3. (for Solvency II firms) an appropriate degree of protection for those who are or may become the firm's policyholders. | A service provided by a firm, or by another person on behalf of the firm, to one or more clients of the firm which, if disrupted, could:<br>1. cause *intolerable levels* of harm to any one or more of the firm's clients; or<br>2. *pose a risk* to the soundness, stability or resilience of the UK financial system or the orderly operation of the financial markets. |



> **In the words of Confucius, the longest journey begins with a single step**

to the regulator's approach to operational resilience as they are the benchmark against which firms must test themselves through scenario analysis.

Impact tolerances assume that disruption has already occurred, so they differ from traditional operational risk appetites as only impact is relevant (not likelihood). When an organisation is resilient, impact tolerance will generally be beyond recovery time objectives (RTOs) and risk appetites. The graphic below illustrates the target relationship between the different related concepts. However, where an important business service isn't resilient, RTOs for supporting resources and appetites may be outside impact tolerances.

The board must approve the impact tolerances on at least an annual basis or where there is a material change to the firm's business or market in which it operates. Before presenting impact tolerances to the board for the first time, be sure to provide training to the directors to ensure they're aware of the concepts and their relationship to the more familiar concepts like RTOs and risk appetite. Again, utilising a pilot can make sense, which then allows lessons to be learnt on how best to present and evidence the proposals to the board.

## Identify critical resources

If setting impact tolerances is the most difficult, step four – mapping resources to important business services – is the most resource intensive. Regulators in the UK resisted calls from some for greater detail in the mapping rules, so the final rules remain relatively non-prescriptive. Firms must identify and document the resources needed to deliver important business services. This must be sufficient to allow the firm to identify vulnerabilities and remedy them. Getting the right level of granularity when doing the mapping is key – this is the area most likely to result in the creation of new cottage industries, which should definitely be avoided. Focusing the mapping on the resources that are critical is essential – the purpose of mapping is to identify vulnerabilities and weaknesses in the resources used to deliver important business services, so it follows that only the resources where disruption will impact delivery should be captured.

We've found great value in conducting a pilot on an important business service. Gather a small group of SMEs, and complete a top-down resource mapping. This can then be challenged in a broader workshop which should include a broader group of relevant senior managers and SMEs. Learn from the experience of doing the pilot, and then roll it out to other identified important business services.

## Test resilience through severe but plausible scenarios

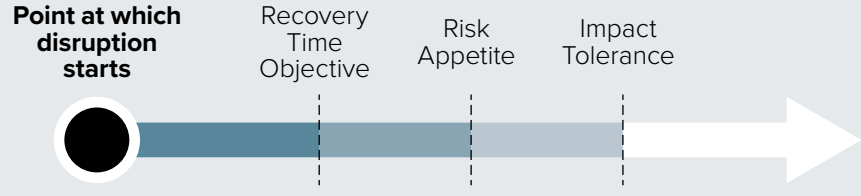
Firms must use severe but plausible scenarios to test vulnerabilities in delivering important business services during step five. The operational risk team, with their knowledge and expertise in developing operational risk scenarios and leading scenario workshops, should be leveraged. However, unlike for traditional operational risk scenarios, the scenarios for operational resilience are cause agnostic – they should assume disruption to one or more of the critical resources and test the firm's ability to remain within the impact tolerance. The capacity to recover and the ability to adapt (develop "plan bs") are critical. Scenarios should be made more severe by multiplying the number of critical resources disrupted or extending the duration of disruption. The purpose of scenario testing is to identify weaknesses and vulnerabilities in the critical resources used to deliver important business services.

It is not sufficient to merely identify weaknesses and vulnerabilities without taking action to address them! Regulators have made clear that operational resilience is not a tick-box compliance exercise and they expect to see an action plan for addressing identified weaknesses in the first self-assessment document – which must be ready for review by end of March 2022. Firms have until at the latest March 2025 to address identified weaknesses and vulnerabilities.

## Conduct lessons-learnt exercises

Learning from incidents is step six and plays a pivotal role in creating effective ORM. Following scenario tests or after disruptions, firms

### INTOLERABLE HARM




*Source: The JADEtc. Partnership*

### WEAKNESSES AND VULNERABILITIES

- Lack of substitutability
- High complexity
- Single points of failure
- Concentration risk
- Dependencies on third-parties and
- Matters outside of a firm's control, eg power failures.

## KEY COMPONENTS OF SELF-ASSESSMENT

**Firms should create a self-assessment document which should include:**

- The firm's important business services
- The impact tolerances set for these important business services
- The firm's approach to mapping, including how the firm has identified its resources, and how it has used mapping to identify vulnerabilities and support scenario testing
- The firm's strategy for testing its ability to deliver important business services within impact tolerances
- An identification of the vulnerabilities that threaten the firm's ability to deliver its important business services within impact tolerances, including the actions taken or planned, and justifications for their completion time
- The firm's lessons learned exercise
- The methodologies used to undertake the above activities

should undertake lessons-learnt exercises to identify weaknesses and take action to improve their ability to effectively respond to and recover from future disruptions. Firms should also consider disruptions impacting other firms and consider how such incidents would disrupt important business services and what actions could be taken.

### Communication plans

Communication is often the first casualty of a crisis. To strengthen operational resilience, regulators require an internal and external communications strategy and plans to be in place to reduce the anticipated harm caused by the operational disruption. That is why in step seven of this journey firms must consider in advance of disruption how they would communicate with clients and other stakeholders including where there was no direct line of communication. Firms must also establish mechanisms to quickly gather information about the operational incident, including cause and impacts.

Again, firms should leverage their existing communication plans and protocols that are already established as part of BCM and crisis management to support operational resilience. Where there are gaps, these should be addressed, including through use of social media to provide quick advice to consumers.

Firms should not overlook the importance of communication with their regulators. Under FCA's Principle 11 and PRA's Fundamental Rule 7, firms must be open and transparent with regulators, and under the new operational resilience rules, firms must notify regulators of a breach of impact tolerances.

### Complete the annual self-assessment

The final step is to complete the annual self-assessment. The self-assessment is a key component of the new UK regime and will be the window used by the regulators to assess firms' approaches and understand their operational resilience. UK regulators expect the first one to be available by end of March 2022. This means in order to get the necessary board approval, firms should be working on their self-assessment document in 4Q 2021 if not sooner – we would recommend firms already start to draft out the skeleton for the first self-assessment (See *Key components of self-assessment*).

It is essential that in the first self-assessment, firms set out a clear action plan to address the identified weaknesses and vulnerabilities. Although regulators have not been prescriptive as to who should lead the self-assessment, our experience is that firms are typically asking the second line of defence (most often the operational risk team) to undertake it. This ensures a degree of independence from the first line, which is accountable for implementation.

### Arrival?

Firms must maintain operational resilience as their business model evolves, as business activity changes, as the consumer profile adjusts (for example, the number of consumers classed as vulnerable), as market and consumer expectations shift and as environmental threats wax and wane.

By March 2022, firms must have mapped and tested important business services to a level sufficient to allow the identification of vulnerabilities for remedial action. Regulators expect the sophistication of resource mapping and scenario testing to evolve beyond March 2022, and by March 2025 firms must meet the regulatory requirement to be resilient – that is, to operate within impact tolerances. So rather like a journey on the never-ending stairs popularised by the Penrose steps, the journey to the destination of operational resilience is a continuous one.

**Dr Jimi Hinchliffe is former chairman of Institute of Operational Risk in England and Wales. David Goodyear is chair of the executive committee of Institute of Operational Risk in England and Wales. Andrew Sheen is a consultant and was for eight years head of the Financial Services Authority's (FSA) operational risk policy team and the FSA/Prudential Regulation Authority's risk specialist operational risk team.**

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- Explain how digital technology and innovation is impacting organisations and society
- Contribute knowledgeably to identifying, assessing and controlling digital risks throughout your organisation and its supply chain, associated with new technologies and new ways of working and more

## What our students say

**Emma Duggan, Risk Manager, Experian, United Kingdom**
"The IRM's Digital Risk Management Certificate is extremely relevant to my role and I would urge risk professionals to consider it. It is very relevant for anyone working in technological development, as risk is everyone's responsibility. I have been able to take more of a leading role in ensuring cybersecurity risks are effectively controlled and information security issues are remediated at the root cause."

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Find out more at:

**www.theirm.org/digitalrisk-mag**

**Resilience, risk and recovery**

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# RISK IN THE metropolitan age

BY GARETH BYATT

People increasingly live in great cities and urban environments. It is time for risk managers to assess and help manage the urban world

The plans and objectives of virtually all organisations in all sectors are impacted by the urban environments that they work in or serve. Understanding our impact on urban environments, and how we can each play our part towards good urban resilience, helps us all to achieve purposeful objectives.

At a societal level, the way the world's urban environments are developed and maintained is critical to achieving global climate change and sustainability goals, as defined by the Paris Agreement and the United Nations 17 Sustainable Development Goals (SDGs). COP26, the United Nations summit about global climate change being held in Glasgow in November 2021, is a pivotal moment to agree global actions as the world continues to suffer from climate-related disaster events including floods, fires and storms, and critical biodiversity loss.

In addition, the tumultuous worldwide impact of the COVID-19 pandemic is yet more evidence that we must ensure our urban environments are resilient against many threats. As well as the many climate-related, environmental and health challenges to overcome, the World Economic Forum's *Global risks report 2021* highlighted the risks of widening inequalities and societal fragmentation. How we sustain good urban environments is central to tackling all these issues.

With this context, how can risk managers help organisations of all sizes and in all sectors, and the stakeholders and societies they serve, work towards objectives that help urban environments to thrive and contribute towards a positive future for the planet?

## Growth and resilience

In essence, an urban environment is a locality (a city or a town) that is often part of an urban agglomeration, comprising the city or town proper and a suburban fringe.

UN-Habitat defines urban resilience as "the measurable ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming toward sustainability."

Urban environments are becoming the predominant centres of population globally. The UN estimates that 2007 was the first year in which more people were living in urban environments than rural ones (3.35 billion against 3.33 billion). It is estimated that over four billion people now inhabit urban areas. The World Bank states that, with the global urban population more than doubling its current size, nearly seven out of ten people worldwide will live in cities by 2050.

Urban environments are centres of dynamism and opportunity. People are drawn to them for political, cultural, societal and business aims and goals. But different challenges exist between the "developed global north" and the "developing global south", and each urban environment has its specific context.

**The tumultuous worldwide impact of the COVID-19 pandemic is yet more evidence that we must ensure our urban environments are resilient against many threats**

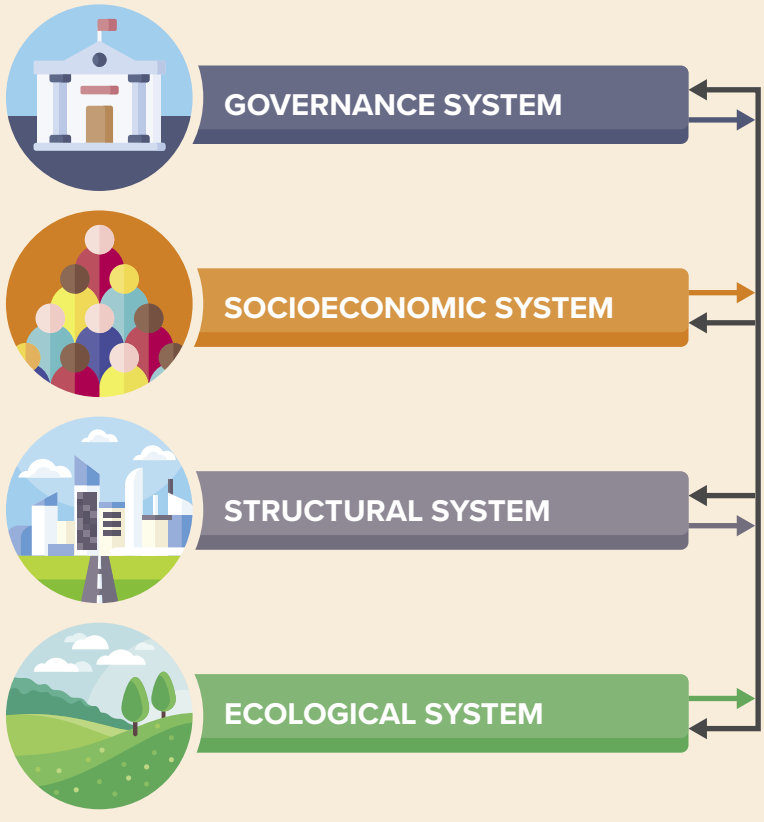
The importance of good urban resilience to achieving sustainability and climate resilience globally is regularly highlighted by prominent organisations such as the World Economic Forum. How we shape and use urban environments – in the physical sense and the socio-economic sense, linked to an underlying ecology – is critical to whether the world will meet global sustainability targets, including those to address climate change, to ensure a brighter, greener and sustainable planet.

## Understanding urban environments

Describing an urban environment as a system enables us to appreciate its complexities and

> **How we shape and use urban environments is critical to whether the world will meet global sustainability targets**

## URBAN SYSTEMS MODEL




**The multi-layered systems mindset in DNV GL's Systems & Urban Resilience Framework (SURF) model.** The model views urban areas as systems with a unique profiles of mutually interconnected ecological, structural, socioeconomic, and governance systems.

the interrelationships of its many moving parts. A systems approach also allows us to see where organisations fit, and how they can play their part towards achieving a good state of urban resilience in the areas where they operate or serve, linked to achieving meaningful business objectives for employees, suppliers, investors and communities.

In an urban systems model, an *ecological system* underpins the *physical (or structural) system* that includes the infrastructure and buildings that we create, inhabit, work in and use. The *socio-economic system* is how we live and co-operate with each other in urban environments in everyday life: how we each earn a living, enjoy our leisure activities, abide by the law and adhere to societal norms (sometimes called the *governance system*).

### Impacts

What does this context mean to risk managers working in businesses? If you live in an urban area, and/or you travel into one (even if infrequently), the resilience of urban environments has a direct impact on how you, and your organisation, get things done.

Just about every industry and sector you can think of is linked to urban environments, including those that may at first glance appear detached, such as agriculture, forestry and mining (food from rural farms is brought into cities and urban farming is on the rise; forestry supplies timber for urban construction; the world's mines supply materials we use to create and live in our urban environments).

For urban environments to be prosperous places for society, they must work in a way that is in harmony with nature. From the responsible extraction of raw materials far from urban life through to the master-planning and development of the physical urban environment and how we interact as a society, the way our activities mesh together determines our urban success as a collective whole. Organisations of all sizes, from the smallest to the largest, have a part to play, and people, planet and profit all play a part. From the individual coffee shop to the major supermarket chain, everything counts.

Whichever sector or industry you work in, your organisation will be linked directly or indirectly to urban areas. By understanding your impact on urban environments, and how your objectives influence urban resilience, you help your organisation's resilience and business continuity, and that of society. This includes how extreme weather events are dealt with by urban areas, transportation challenges and cyber threats, and how public health threats such as a pandemic are responded to.

We can, indeed we must, learn from humankind's

response to dealing with the COVID-19 pandemic and apply these learnings to address the global needs for sustainable urban environments. All stakeholders with an interest and an involvement in urban environments have an opportunity to co-operate to implement sustainable change, while appreciating the many different contexts that exist to all the urban areas around the world.

Five areas are put forward for risk managers, liaising with people in their organisations and eco-system partners, to consider and understand how their organisation's objectives can be aligned to urban resilience.

### Review your value chain

Map your risks and resilience weaknesses across your value chain with your eco-system partners (a value chain is a technique that can apply to all sectors). Perhaps you have done this recently: the COVID-19 pandemic will have changed (and perhaps continues to change) your value chain – and looking at what's changed, and changing, is important.

A systems approach to think through what you do in and with the urban environments you interact with can help your value chain analysis. Use systems thinking to identify opportunities to act in a responsible way with purpose – look at your inputs, processes and activities, and outputs. If you see certain weak points or areas of concentration risk, use techniques to unpack them – such as bow tie analysis and controls management. As you do this, consider how your activities support, or hinder, urban environments. If any of your objectives have a negative impact on the urban areas you work in or serve, what should you do about it?

### Visualise broad stakeholder networks

Work with your teams and eco-system partners to push the envelope for ambitious and achievable sustainability targets, and see which objectives contribute towards good urban resilience. This requires making the time to fully understand the urban areas you serve or operate in.

For the urban environments you are associated with, do you know what they are already doing towards climate change and resilience, and can you play a part in achieving their goals? For example, London held its third Climate Action Week (LCAW) in June 2021, an interactive week full of events and important discussions.

It is increasingly accepted that sustainability outcomes need to be measured against common indices such as the UN SDGs and environment, social and governance (ESG) financial and investor reporting such as the Task Force on Climate-related Finance Disclosures (TCFD). For energy use, there are global guidelines such as the International Energy Agency's (IEA's) Net Zero Strategy. It takes time to review all the moving parts, and it may require upskilling within your team. It should be a key area of focus.

Understand sectoral interlinkages. For example, if you work in the finance sector, what impact do your investments have on urban environments? If your organisation is an infrastructure or construction business, are you developing sustainable financing for urban design, or responsible materials use (for example, we must change our approach to concrete) and sustainable asset management?

Looking at your broad stakeholder network, do you know if the activities of development organisations, institutes and think-tanks, including academia, relate to your purpose and objectives? For example, does (or could) your work align to those of an organisation such as the United Nations Development Programme (UNDP) and its urban risk management and resilience objectives, or the UN Decade on Ecosystem Restoration, which was launched in June 2021?

> **"All stakeholders with an interest and an involvement in urban environments have an opportunity to co-operate to implement sustainable change**

Along with the UNDP, the United Nations Environment Programme (UNEP), UN-Habitat, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and development banks such as the World Bank all pursue activities related to urban resilience. Many other organisations and networks support urban resilience, including the Resilient Cities Network, the C40, CitiesWithNature and the Centre for Liveable Cities, and academic think-tanks such as the Penn Institute for Urban Research.

### Run "what if?" scenarios

Across your organisation, and with your eco-system partners, stress-test strategic options and ways to manage risks and resilience weak points. Use horizon scanning to spot new risks, and opportunities, and be ready to address them (be they "novel risks" or "known, familiar risks"). Run counterfactuals on past events. Use the outcomes of your "what if?" scenarios and horizon scanning to develop and implement practical and purposeful organisational resilience and continuity plans

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> **Running hackathon events could help you to think through examples and visualise your societal impact, perhaps engaging with stakeholders who manage the urban environments that you interact with, and community groups**

that are stitched into how you work, and make sure you regularly review, test and implement actions to improve them. Importantly, make sure these plans are linked to overall urban needs. For example, do you own and operate certain assets that could be valuable for societal needs when extreme weather events occur?

## Fine-tune strategies

As I have written about in the Spring 2021 edition of *Enterprise risk*, the resilience in the linkages organisations have with each other in their eco-systems and value chains is fundamental to achieving good, *co-operative resilience*. Armed with knowledge about your value chain, stakeholders and scenarios, work with your eco-system partners to agree how you can collectively and responsibly support the resilience of urban environments, and their communities, where you operate/supply services or goods. What physical assets do you own that could be used for societal good in regular life, and also in a crisis or an emergency? Running hackathon events could help you to think through examples and visualise your societal impact, perhaps engaging with stakeholders who manage the urban environments that you interact with, and community groups.

As well as applying new technologies and solutions, we must make the time to learn from the past, to ensure techniques successfully used before are understood and, when appropriate, reused.

As you develop your strategies, a new understanding of complexity may emerge which can help you fine-tune them. Complexity has many moving parts that can be hard to identify and define, and they cannot all be managed in a top-down manner. Complex systems display emergent properties and unpredictable changes, and a good state of resilience requires us to be flexible and adaptable.

## Put well-being at the core

As we learn from the COVID-19 pandemic and society adjusts to new ways and norms, organisations are working on responsible and appropriate work arrangements for their people. This is linked to urban resilience.

As part of caring for your people, responsible employers make sure the assets their people use (be they offices, retail stores, factories or others) are configured to suit the best working practices. For people who work in urban environments, the arrangements they adopt moving forwards will influence their interaction with urban life.

Inside your own organisation and with your partners, are you also working with your people and human resources teams to support people with personal resilience and well-being skills? On a broader basis, is there anything you can do to help the communities you serve and also the natural environment?

## Conclusion

If we are to collectively achieve the UN SDGs by 2030, we need to carry out actions that improve the resilience and sustainability of the urban environments we live in and interact with.

As we continue to deal with COVID-19, we need to ensure our urban environments are "built forwards better", in harmony with nature and with the right societal structure. The actions the world takes over the next decade for urban environments will be instrumental to the success we have in tackling climate change and all other sustainability challenges (per the SDGs). To succeed we must work co-operatively.

Whatever your industry or sector, risk management and resilience thinking can help you think through and implement actions to achieve both organisational success and contribute to the vital urban resilience that the world needs to achieve its climate change and sustainability goals. Are you doing enough to help the urban centres that you live and/or work in be resilient and sustainable for tomorrow? ER

**Gareth Byatt is an independent risk & resilience consultant and owner of Risk Insight Consulting (www.riskinsightconsulting.com), and he is the IRM global ambassador for the APAC region.**

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# Appendage to the machine

Artificial intelligence is increasingly seen as a new form of mind directing human work and play. But where is it exactly, and why does that matter?

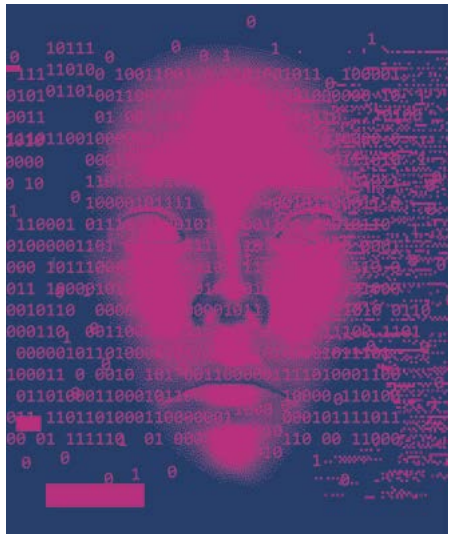
What comes to mind when you think of artificial intelligence (AI)? Perhaps it is the way retailers curate offers in your shopping basket – if you liked this, you'll like that? Or perhaps it is the highly intelligent machines that are being programmed to defeat human opponents in games such as chess and Go?

The likelihood is that you will think of it as some kind of calculating machine, possibly in the cloud, or hidden in some device.

## AI myths

That common-sense view of AI is beginning to be challenged. It relies on two common interdependent myths that are both prevalent in the way the industry thinks of itself and, therefore, how it is explained in the marketing and media that surrounds it. First, non-human intelligent systems are analogues of human minds.

Since the 1950s, this way of thinking across computers and minds has dominated the way people understand their cognitive powers. But both human and machine intelligence happen somewhere physical – and a body and circuit board are not the same thing. Second, intelligence, wherever it resides, is seen as context independent. AI's calculative rationality is generally



seen as a strength – except when it goes wrong, of course.

Kate Crawford, a senior principal researcher at Microsoft Research, puts this focus on a machine's mental aptitudes like this: "It is the ideology of Cartesian dualism in artificial intelligence: where AI is narrowly understood as disembodied intelligence, removed from any relation to the material world."

## Atlas of AI

Her recent book *Atlas of AI* takes a view informed more by the sociology of science and technology. The atlas of the title refers both to a physical and conceptual mapping of the many places AI intersects with our lives. Looked in this way, Crawford argues, AI is better seen as an extractive industry.

In the geographical landscape, lithium mines extract the raw power needed in everything from smart phones to electric cars to run AI systems – not to mention the huge drain on water data centres place on local communities because of the need to regulate the temperature of machines.

In the workplace, AI's increased powers of surveillance, detailed task management and time keeping externalise the rapid, computer-based and sleepless labour power of machines into the real world with unhappy results for the increasing legions of low-paid micro workers around the globe.

## Manifesto

"The worker becomes an appendage of the machine, and it is only the most simple, most monotonous, and most easily acquired knack, that is required of him," she writes, quoting Marx and Engels from their *Manifesto of the Communist Party*.

By situating AI in the broader frame of society, Crawford invites readers to think about the wider environmental, social and governance issues surrounding the increasing use of AI tools – a dimension often lacking in many risk assessments. Her aim is not to simply criticise AI, but to help change it for the better.

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